

EXPRESS MAIL LABEL NO. EL902321373US

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Jean-Luc Ricaud
Filed : Herewith
For : IMPROVED OXIDE CATHODE AND ITS
MANUFACTURING PROCESS

#3/a

PRELIMINARY AMENDMENT

Hon. Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Sir:

In the US national phase application of PCT/FR01/01762 filed
herewith, please enter the following amendments:

IN THE SPECIFICATION:

Please amend the specification as follows: A marked up version of the
amended specification is attached herewith:

On Page 1, line 2, please insert the following paragraph:

-- This application claims the benefit, under 35 U.S.C. § 365 of
International Application PCT/FR01/01762, filed June 7, 2001, which was published
in accordance with PCT Article 21(2) on December 20, 2001 in French and which
claims the benefit of French patent application No. 00/07540 filed June 14, 2000 --

IN THE CLAIMS:

Please amend the claims as follows. A marked-up version of the
amended claims is attached hereto.

1.(AMENDED) Oxide cathode comprising a support and an oxide layer on the support, wherein it furthermore includes particles of a conducting material having a first end incorporated in the support and a second end lodged in the oxide layer, so as to constitute conducting bridges passing through an interface layer forming between the support and the oxide layer.

2.(AMENDED) Oxide cathode according to Claim 1, wherein the conducting material of the particles is a carbide of one or more metals.

3.(AMENDED) Oxide cathode according to Claim 2, wherein the conducting material of the particles is a carbide of one or more metals of Group IVB, and preferably at least one metal from: titanium, zirconium and hafnium.

4.(AMENDED) Oxide cathode according to Claim 2 wherein the conducting material of the particles is a carbide of one or more metals of Group VB, and preferably at least one metal from: vanadium, niobium and tantalum.

5.(AMENDED) Oxide cathode according to Claim 2, wherein the conducting material of the particles is a carbide of one or more metals of Group VIB, and preferably at least one metal from: chromium, molybdenum and tungsten.

6.(AMENDED) Oxide cathode according to Claim 1, wherein the support is made of metal, preferably a nickel-based metal.

7.(AMENDED) Electron tube, wherein it comprises an oxide cathode according to Claim 1.

8.(AMENDED) Cathode-ray tube, wherein it comprises an oxide cathode according to Claim 1.

9.(AMENDED) Process for manufacturing an oxide cathode, in which an oxide layer is deposited on a support wherein it comprises the steps consisting in:

- furnishing that surface of the support which is intended to receive the oxide layer with particles of conducting material so that the particles have a first end incorporated in the support and a second end which is exposed; and
- covering said surface with an oxide layer.

10.(AMENDED) Process according to Claim 9, wherein the step of furnishing the particles of conducting material consists in spreading out the particles over said surface and in applying a force to the particles in order to encrust said first end of the latter in the support.

11.(AMENDED) Process according to Claim 9, wherein the step of furnishing the particles of conducting material consists in incorporating the particles in the support and in making said second end stand out from the support by a surface treatment, for example by means of a selective chemical etching treatment.

12.(AMENDED) Process according to Claim 11, wherein the particles are incorporated in the support during the metallurgical production of the latter.

13.(AMENDED) Process according to Claim 11, in which the support is formed by drawing, wherein said second end of the particles is made to stand out before the drawing.

14.(AMENDED) Process according to Claim 11, in which the support is formed by drawing, wherein said second end of the particles is made to stand out after the drawing.

15.(AMENDED) Process according to Claim 9, wherein the conducting material of the particles is a carbide of one or more metals.

16.(AMENDED) Process according to Claim 15, wherein the conducting material of the particles is a carbide of one or more metals of Group IVB, and preferably at least one metal from: titanium, zirconium and hafnium.

17.(AMENDED) Process according to Claim 15 wherein the conducting material of the particles is a carbide of one or more metals of Group VB, and preferably at least one metal from: vanadium, niobium and tantalum.

18.(AMENDED) Process according to Claim 15, wherein the conducting material of the particles is a carbide of one or more metals of Group VIB, and preferably at least one metal from: chromium, molybdenum and tungsten.

19.(AMENDED) Process according to Claim 9, wherein the support is made of metal, preferably a nickel-based metal.

IN THE ABSTRACT:

Please add the following Abstract.

The oxide cathode comprises a support and an oxide layer on the latter. It furthermore includes particles of a conducting material having a first end incorporated in the support and a second end lodged in the oxide layer, so as to constitute conducting bridges passing through an interface layer forming between the support and the oxide layer. The invention also relates to a process for manufacturing such a cathode. The conducting particles make it possible to improve the electrical conductivity of the cathode, both within the oxide layer and within the interface layer. --

REMARKS

The specification has been amended to include a reference to the priority applications.

The claims have been amended to remove reference indicia and to meet the requirements of the United States Patent and Trademark Office.

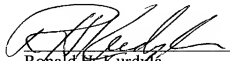
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To meet the requirements of the United States, the Abstract (as originally filed in the PCT application) is added.

No fee is believed to have been incurred by virtue of this amendment. However if a fee is incurred on the basis of this amendment, please charge such fee against deposit account 07-0832

Respectfully submitted,
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MARKED UP VERSION OF THE AMENDED CLAIMS

1.(AMENDED) Oxide cathode [(2)] comprising a support [(1)] and an oxide layer [(3)] on the support, [characterized in that] wherein it furthermore includes particles [(8)] of a conducting material having a first end [(8a)] incorporated in the support [(1)] and a second end [(8b)] lodged in the oxide layer [(3)], so as to constitute conducting bridges passing through an interface layer [(6)] forming between the support [(1)] and the oxide layer [(3)].

2.(AMENDED) Oxide cathode [(2)] according to Claim 1, [characterized in that] wherein the conducting material of the particles [(8)] is a carbide of one or more metals.

3.(AMENDED) Oxide cathode [(2)] according to Claim 2, [characterized in that] wherein the conducting material of the particles [(8)] is a carbide of one or more metals of Group IVB, and preferably at least one metal from: titanium [(Ti)], zirconium [(Zr)] and hafnium [(Hf)].

4.(AMENDED) Oxide cathode [(2)] according to Claim 2 [or 3, characterized in that] wherein the conducting material of the particles [(8)] is a carbide of one or more metals of Group VB, and preferably at least one metal from: vanadium [(V)], niobium [(Nb)] and tantalum [(Ta)].

5.(AMENDED) Oxide cathode [(2)] according to [any one of Claims 2 to 4, characterized in that] Claim 2, wherein the conducting material of the particles [(8)] is a carbide of one or more metals of Group VIB, and preferably at least one metal from: chromium [(Cr)], molybdenum [(Mo)] and tungsten [(W)].

6.(AMENDED) Oxide cathode [(2)] according to [any one of Claims 1 to 5, characterized in that] Claim 1, wherein the support [(1)] is made of metal, preferably a nickel-based metal.

7.(AMENDED) Electron tube, [characterized in that] wherein it comprises an oxide cathode [(2)] according to [any one of Claims 1 to 6] Claim 1.

8.(AMENDED) Cathode-ray tube, [characterized in that] wherein it comprises an oxide cathode [(2)] according to [any one of Claims 1 to 6] Claim 1.

9.(AMENDED) Process for manufacturing an oxide cathode [(2)], in which an oxide layer [(3)] is deposited on a support [(1), characterized in that] wherein it comprises the steps consisting in:

- furnishing that surface [(1a)] of the support [(1)] which is intended to receive the oxide layer [(3)] with particles [(8)] of conducting material so that the particles have a first end [(8a)] incorporated in the support [(1)] and a second end [(8b)] which is exposed; and
- covering said surface [(1a)] with an oxide layer [(3)].

10.(AMENDED) Process according to Claim 9, [characterized in that] wherein the step of furnishing the particles [(8)] of conducting material consists in spreading out the particles over said surface [(1a)] and in applying a force to the particles in order to encrust said first end [(8a)] of the latter in the support [(1)].

11.(AMENDED) Process according to Claim 9, [characterized in that] wherein the step of furnishing the particles [(8)] of conducting material consists in incorporating the particles in the support [(1)] and in making said second end [(8b)] stand out from the support by a surface treatment, for example by means of a selective chemical etching treatment.

12.(AMENDED) Process according to Claim 11, [characterized in that] wherein the particles [(8)] are incorporated in the support [(1)] during the metallurgical production of the latter.

13.(AMENDED) Process according to Claim 11 [or 12], in which the support [(1)] is formed by drawing, [characterized in that] wherein said second end [(8b)] of the particles [(8)] is made to stand out before the drawing.

14.(AMENDED) Process according to Claim 11 [or 12], in which the support [(1)] is formed by drawing, [characterized in that] wherein said second end [(8b)] of the particles [(8)] is made to stand out after the drawing.

15.(AMENDED) Process according to [any one of Claims 9 to 14, characterized in that] Claim 9, wherein the conducting material of the particles [(8)] is a carbide of one or more metals.

16.(AMENDED) Process according to Claim 15, [characterized in that] wherein the conducting material of the particles [(8)] is a carbide of one or more metals of Group IVB, and preferably at least one metal from: titanium [(Ti)], zirconium [(Zr)] and hafnium [(Hf)].

17.(AMENDED) Process according to Claim 15 [or 16, characterized in that] wherein the conducting material of the particles [(8)] is a carbide of one or more metals of Group VB, and preferably at least one metal from: vanadium [(V)], niobium [(Nb)] and tantalum [(Ta)].

18.(AMENDED) Process according to [any one of Claims 15 to 17, characterized in that] Claim 15, wherein the conducting material of the particles [(8)] is a carbide of one or more metals of Group VIB, and preferably at least one metal from: chromium [(Cr)], molybdenum [(Mo)] and tungsten [(W)].

19.(AMENDED) Process according to [any one of Claims 9 to 18, characterized in that] Claim 9, wherein the support [(1)] is made of metal, preferably a nickel-based metal.